DIMENSIONAL TOLERANCES (✳) **Design**

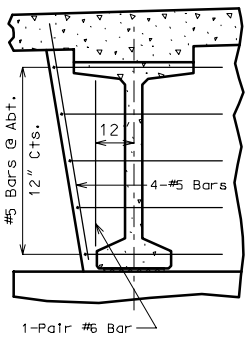
Note: The following dimensional tolerances will be required.

Length of beam	± 1/8 inch per 10 feet of beam length, but not greater than 3/4 inch
Width (flanges, web and fillets)	+ 3/8 inch, - 1/4 inch
Depth (flanges, web and fillets)	± 1/4 inch
Depth (overall)	+ 1/2 inch, - 1/4 inch
Horizontal alignment (deviation from a straight line parallel to centerline of member)	1/2 inch max., to 40 feet lengths 3/4 inch max., 40 to 60 feet lengths 1 inch max., 60 feet or greater lengths
Camber (deviation from design camber within 7 days of strand release)	± 1/2 inch to 80 feet length, ± 1 inch greater than 80 feet length
Stirrup bars (projection above top of beam)	± 3/4 inch
Stirrup bars (longitudinal spacing)	± 2 inches
Tendon position	± 1/4 inch center of gravity of strand group and individual tendons
Position of deflection points for deflected strands	± 6 inches, longitudinal
Position of lifting devices	± 6 inches, longitudinal
Side inserts (centerline to centerline and centerline to end)	± 1/2 inch
Coil Inserts (Centerline to centerline and centerline to end)	± 2 inches horizontal, except must be 3 inches or more from end of beam and within reinforcement cage of bent, ±1 inch vertical
Slab Drain Inserts	± 1/2 inch from designated location, engineer may approve location ± 6 inches from design, multiple inserts for single drain must be within ± 1/2 inch of vertical line
Exposed beam ends (deviation from square or designated skew)	Horizontal ± 1/4 inch, vertical ± 1/8 inch per foot of beam height
Bearing area (deviation from plane)	± 1/8 inch
Bearing plates (centerline to centerline)	± 1/8 inch per 10 feet of beam length, but not greater than 3/4 inch
Bearing plates (centerline to end of beam)	± 1/2 inch
Diaphragm Hole Location	±1-1/2 inches for centerline of group ±1/2 inch within group

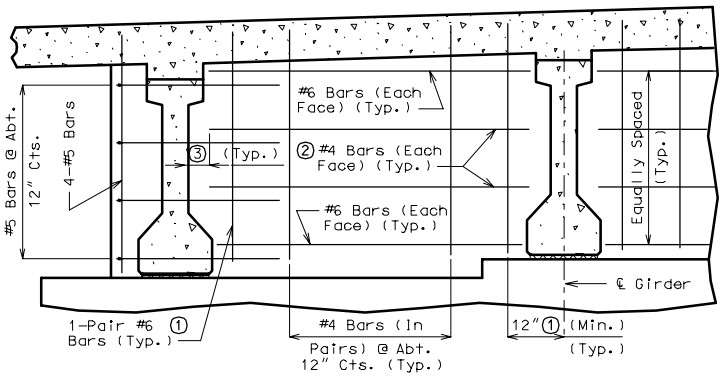
✳ Also see Sec 1027 and 1029.

CLOSED INTERMEDIATE DIAPHRAGMS
FIXED AND EXPANSION INTERMEDIATE BENTS:
REINFORCEMENT (SQUARE STRUCTURE)

Details



PART ELEVATION FOR BULB TEE GIRDERS

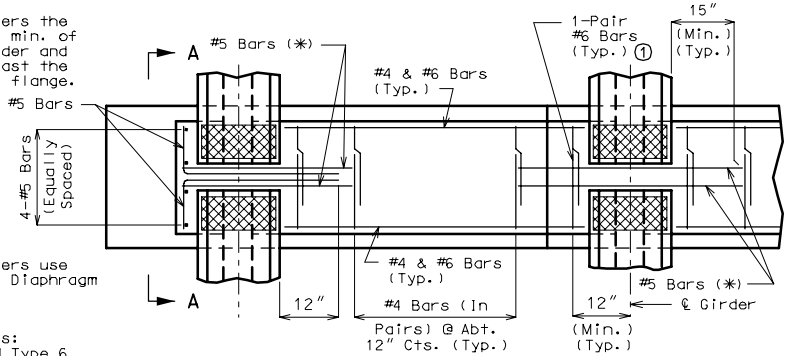


PART ELEVATION

① For Bulb Tee Girders the #6 Bar shall be a min. of 15" from ℄ of Girder and will not extend past the bottom of the top flange.

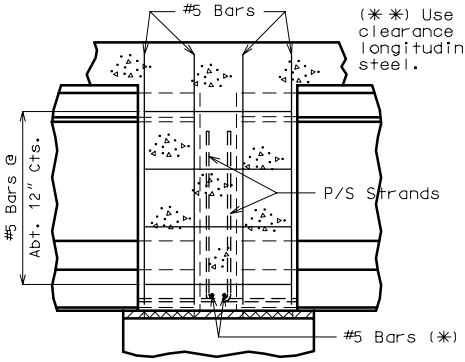
② For Bulb Tee Girders use 3-#4 Bars in each Diaphragm face

③ 6" max.
Top & Bottom Bars:
9 1/2" max. BM Type 6
18 1/2" max. BM Type 7

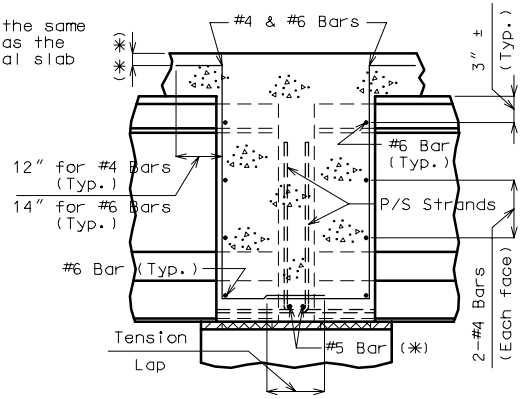


(✳) #5 Bars for each layer of bent up strands.

PART PLAN



(✳✳) Use the same clearance as the longitudinal slab steel.

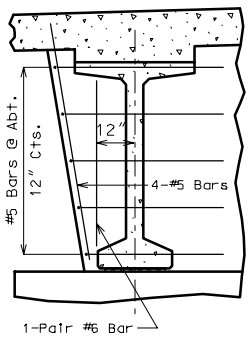


PART ELEVATION A-A

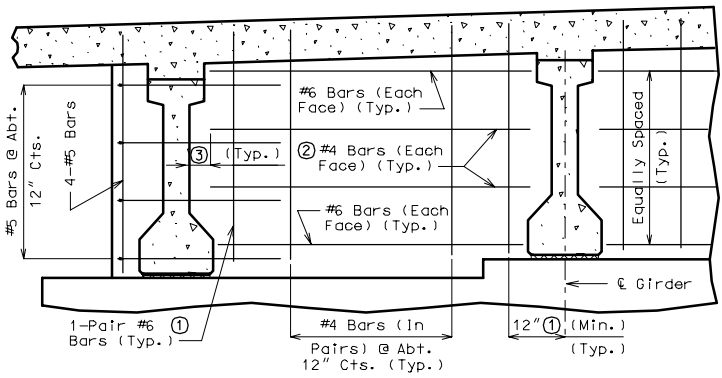
SECTION THRU DIAPHRAGM

CLOSED INTERMEDIATE DIAPHRAGMS
FIXED AND EXPANSION INTERMEDIATE BENTS:
REINFORCEMENT (SKEWED STRUCTURE)

Details



PART ELEVATION FOR BULB TEE GIRDERS

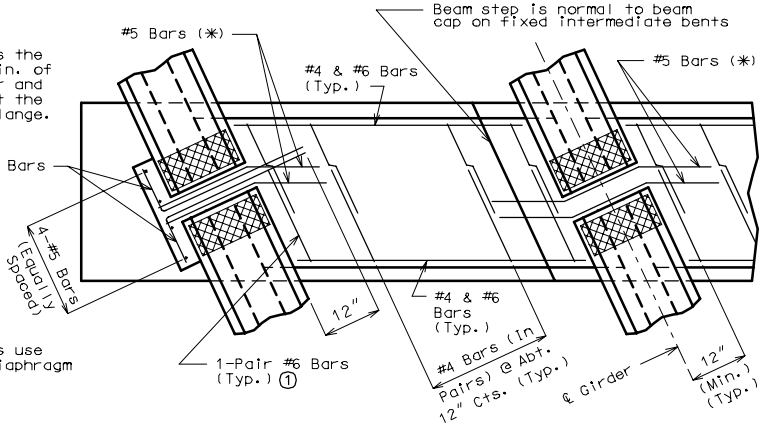


PART ELEVATION

① For Bulb Tee Girders the #6 Bar shall be a min. of 15" from ℄ of Girder and will not extend past the bottom of the top flange.

② For Bulb Tee Girders use 3-#4 Bars in each Diaphragm face

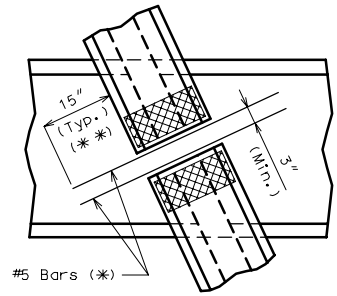
③ 6" max.
Top & Bottom Bars:
9 1/2" max. BM Type 6
18 1/2" max. BM Type 7



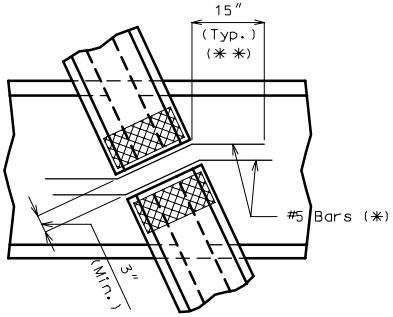
PART PLAN

(*) #5 Bars for each layer of bent up strands.

(**) Omit leg on outside of exterior girder.



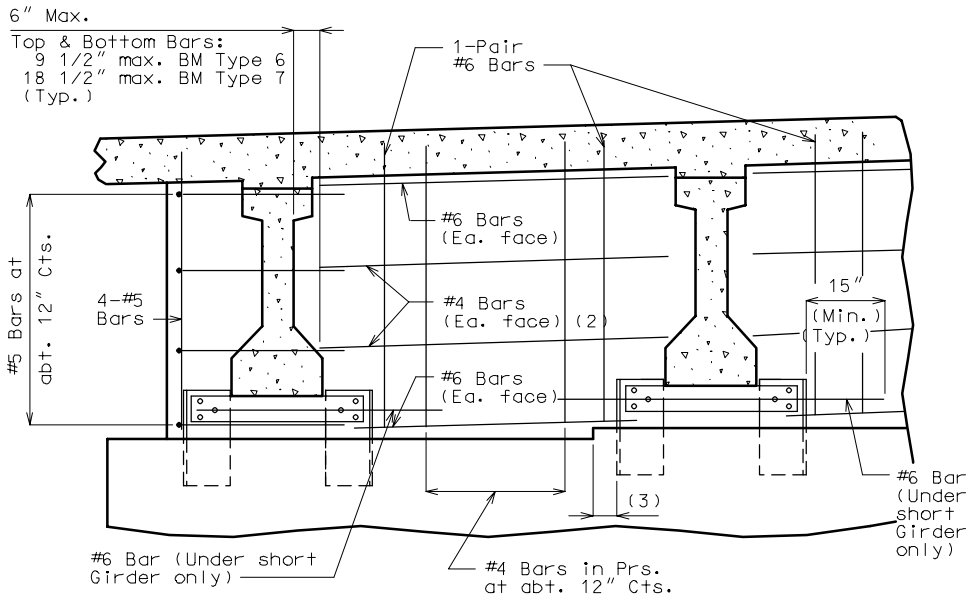
SKEWS THRU 25°



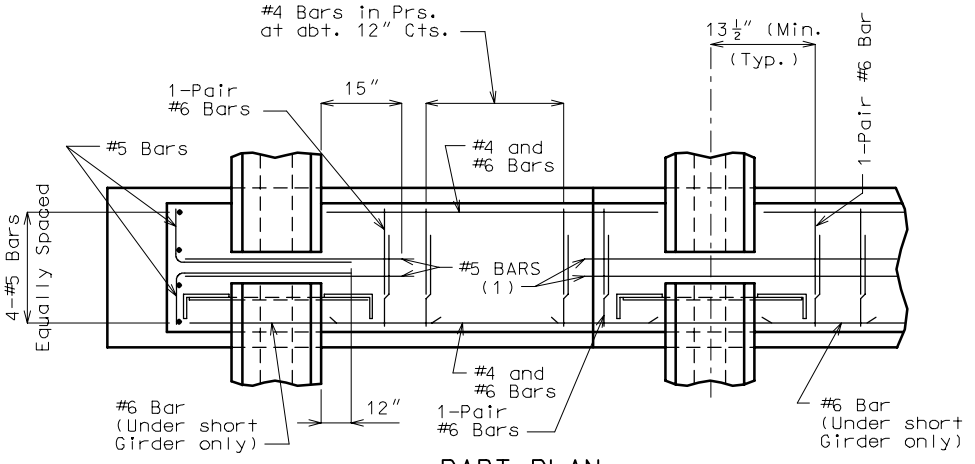
SKEWS OVER 25°

CLOSED INTERMEDIATE DIAPHRAGMS
(CHANGE IN GIRDER HEIGHT AT FIXED BENTS)

Details



PART ELEVATION



PART PLAN

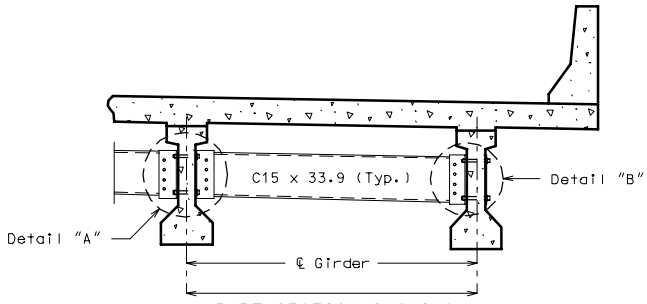
(1) At each layer of bent strands.

(2) Bulb Tee Girders use 3-#4 Bars in each Diaphragm face.

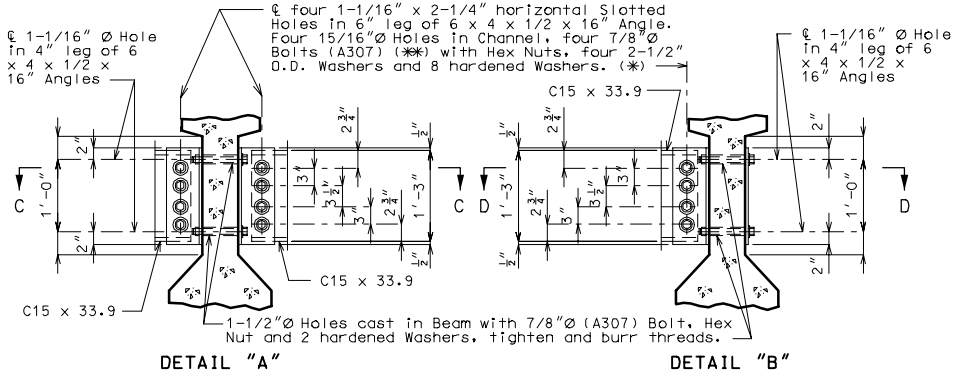
(3) 3" Min. when using beam step.

INTERMEDIATE DIAPHRAGMS

USE STEEL INTERMEDIATE DIAPHRAGMS FOR PRESTRESS SPANS OVER 50 FEET. **Details**



PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS



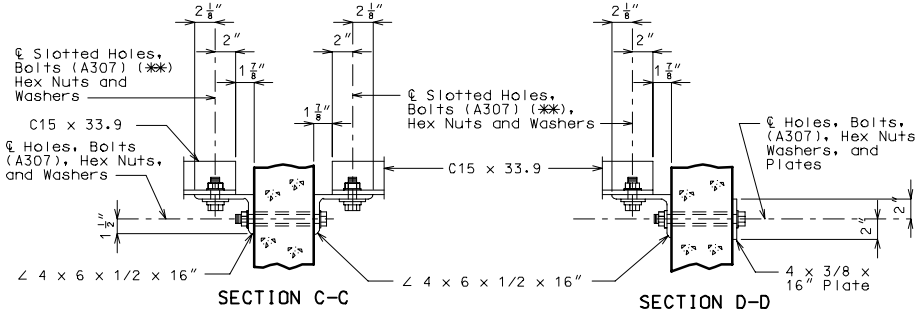
DETAIL "A" DETAIL "B"

(*) In lieu of 2-1/2" O.D. washers, contractor may substitute a $\frac{3}{16}$" (Min. thickness) plate with four $\frac{15}{16}$"Ø holes and one hardened washer per bolt.

(**) Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. A325 bolts may be substituted for and installed in accordance with the requirements for the specified A307 bolts.

NOTE: Use Detail "A" at interior girder for diaphragms straight in line across structure. (Use straight diaphragm normal to girders for skews thru 20°).

Use Detail "B" for exterior girder and interior girder for diaphragms stepped across structure. (Use stepped diaphragm for skews over 20°).

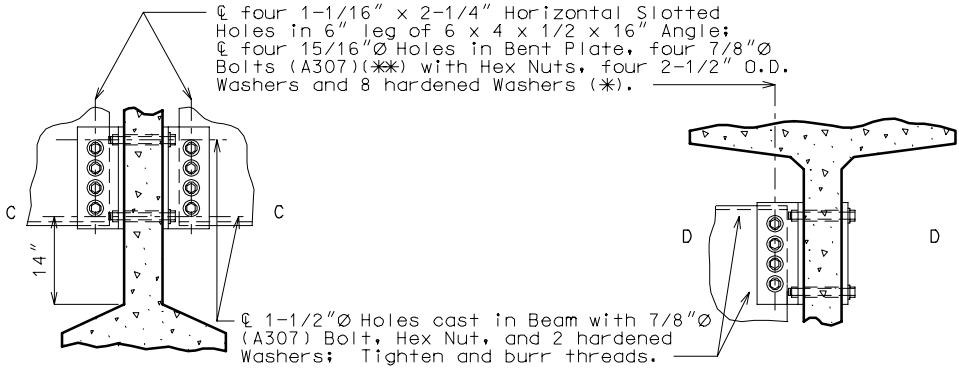


SECTION C-C SECTION D-D

NOTE: For General Notes, (*) and (**), see Bridge Manual Section 4.

INTERMEDIATE DIAPHRAGMS
USE STEEL BENT PLATE FOR ALL BULB TEE SPANS

Details



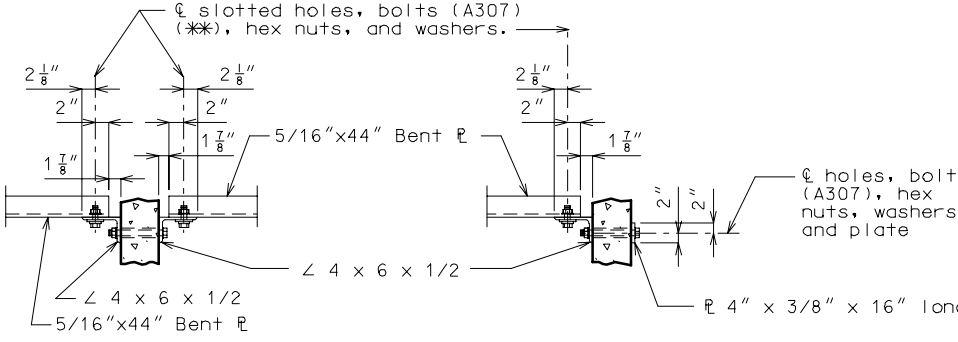
DETAIL "A" DETAIL "B"

(*) In lieu of 2-1/2" O.D. washers, the contractor may substitute a 3/16" (min. thickness) plate with four 15/16"Ø holes and one hardened washer per bolt.

(**) Bolts shall be tightened to provide a tension of one-half that specified by Sec 712 for high strength bolt installation. A325 bolts may be substituted for and installed in accordance with the requirements for the specified A307 bolts.

Note: Use Detail "A" at interior girders for diaphragms straight in line across structure. (Use straight diaphragms normal to girders for skews thru 20°).

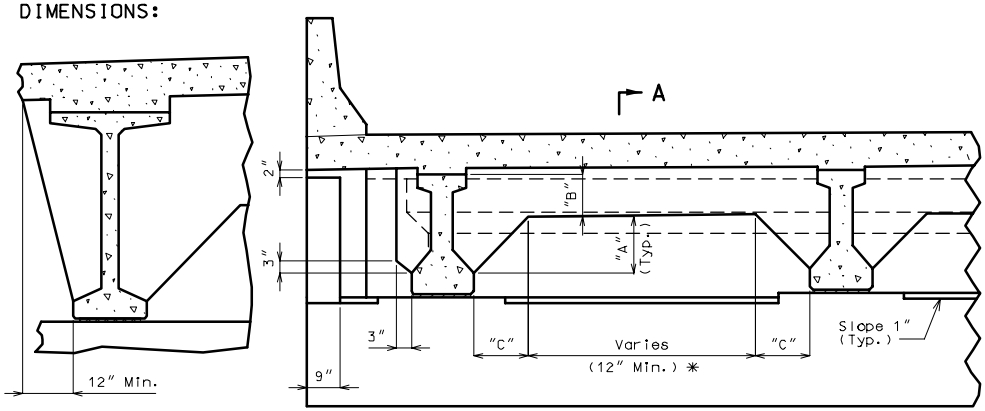
Use Detail "B" for exterior girders and interior girders for diaphragms stepped across structure. (Use stepped diaphragms for skews over 20°).



SECTION C-C SECTION D-D

Note: For General Notes, (*) and (**), See Bridge Manual Section 4.

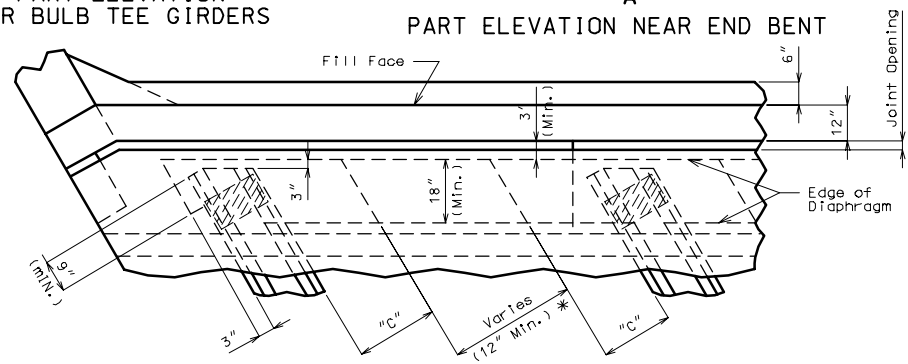
NON-INTEGRAL END BENTS
END DIAPHRAGMS WITH EXPANSION DEVICE
DIMENSIONS:



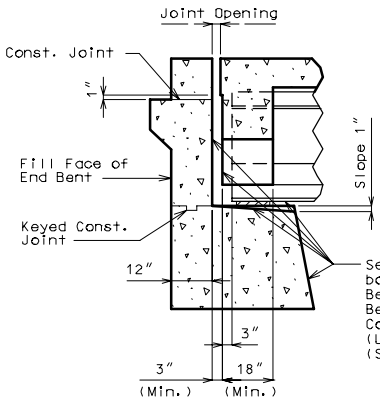
PART ELEVATION
FOR BULB TEE GIRDERS

A

PART ELEVATION NEAR END BENT



PART PLAN NEAR END BENT



Seal Backwall, Diaphragm, bottom of Girder, top of Beam and front face of Beam with Protective Coating-Concrete Bents and Piers (Urethane or Epoxy) (See Sec 711)

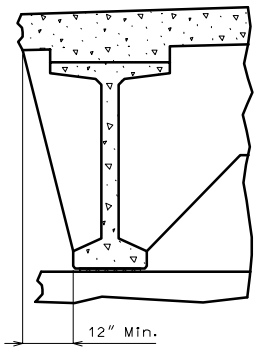
PART SECTION A-A

NOTE: For Seismic Performance Category (SPC) A provide slotted sole plates for longitudinal temperature movement. For SPC B, C and D provide slotted sole plates for longitudinal temperature plus earthquake movements. Anchor bolts shall be designed according to Section 1.2 Page 7.16.

* For Bulb Tee Girder spacings less than 8'-8" dimensions "A", "B" & "C" may have to be modified.

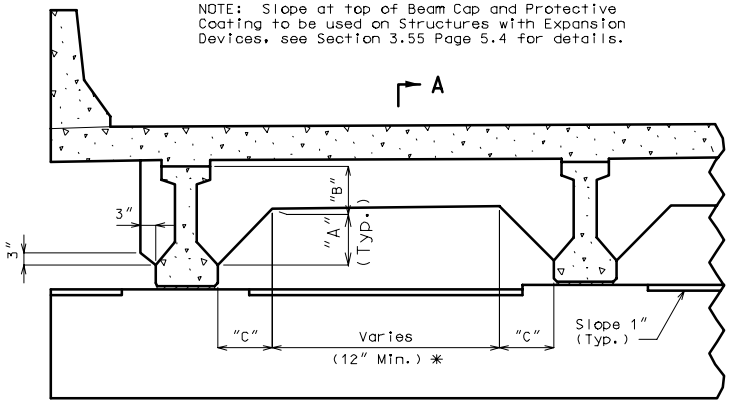
GIRDER TYPE	DIMENSIONS		
	"A"	"B"	"C"
TYPE "2" 2'-8"	12"	15"	13"
TYPE "3" 3'-3"	17"	15"	19"
TYPE "4" 3'-9"	19"	18"	21"
TYPE "6" 4'-6"	2'-3"	21"	2'-1"
BULB TEE 6'-0½" *	3'-0"	2'-6½"	2'-9"

NON-INTEGRAL INTERMEDIATE BENTS
END DIAPHRAGMS WITH EXPANSION DEVICE
DIMENSIONS:

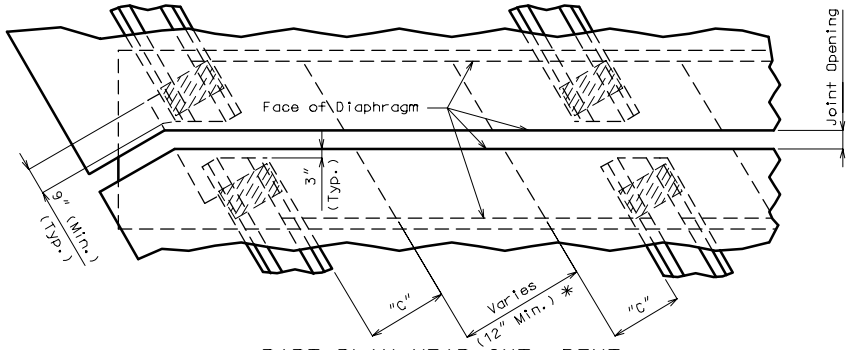


PART ELEVATION
FOR BULB TEE GIRDERS

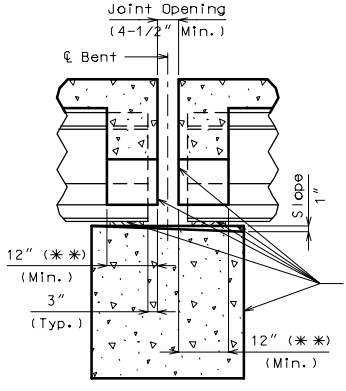
NOTE: Slope at top of Beam Cap and Protective Coating to be used on Structures with Expansion Devices, see Section 3.55 Page 5.4 for details.



PART ELEVATION NEAR INT. BENT



PART PLAN NEAR INT. BENT



PART SECTION A-A

✳ For Bulb Tee Girder spacings less than 8'-8" dimensions "A", "B" & "C" may have to be modified.

✳✳ Make sure the Diaphragm is wide enough to provide enough cover for the Coil Tie Rods.

Seal Diaphragm, bottom of Girder, top of Beam and front face of Beam with Protective Coating-Concrete Bents and Piers (Urethane or Epoxy) (See Sec 711).

NOTE: For Seismic Performance Category (SPC) A provide slotted sole plates for longitudinal temperature movement. For SPC B, C and D provide slotted sole plates for longitudinal temperature plus earthquake movements. Anchor bolts shall be designed according to Section 1.2 Page 7.16.

GIRDER TYPE	DIMENSIONS		
	"A"	"B"	"C"
TYPE "2" 2'-8"	12"	15"	13"
TYPE "3" 3'-3"	17"	15"	19"
TYPE "4" 3'-9"	19"	18"	21"
TYPE "6" 4'-6"	2'-3"	21"	2'-1"
BULB TEE 6'-0½" ✳	3'-0"	2'-6½"	2'-9"